COMP CCPM
CANADIAN ORGANIZATION OF MEDICAL PHYSICISTS
ORGANISATION CANADIENNE DES PHYSICIENS MEDICAUX

CANADIAN COLLEGE OF PHYSICISTS IN MEDICINE
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CANADIAN MEDICAL PHYSICS
NEWSLETTER / Le BULLETIN
CANADIEN de PHYSIQUE MEDICALE

Mars / March 1994

From the editor:

This issue of the Canadian Medical Physics Newsletter sets new standards for bringing you up to the minute reports on issues important to our community. Three of the enclosed reports and articles arrived just last week. Three of the advertisements arrived in the last three days. So this issue is truly hot off the presses.

As in the last issue, some interesting material is presented by the professional affairs committee. A complementary article, reprinted from *Physics in Canada*, discusses recent moves by professional engineers which may affect our profession. The move to mammography accreditation is discussed in more detail and the guidelines for applying for accreditation are reported. Don Robinson and Yunping Zhu describe their travels under the CCPM Harold Johns' Travel Award and Crystal Plume reports on HDR brachytherapy in Nova Scotia. Along with these articles there are a number of important announcements from COMP and the CCPM. Please read them carefully as many involve action on the part of the membership. There are also nearly as many job postings in this issue as in the last 'blue book' from the AAPM.

In the next newsletter, I hope to report the abstracts from the recent WESCAN meeting and a summary of thesis work completed in 1993. This may be a short report because, apparently (based on the abstracts received to date), the only recent graduates were at Carleton. I hope other centres will soon encourage their students to submit their work. Please, send the material via e-mail or on 3 1/3 inch floppy disk, particularly if you are sending a number abstracts from your institute. While this indicates that the next issue should be a good one, I ask that you submit your own articles.

This issue may have a few more typo's than has been the norm recently. Unfortunately, I lost one of the assistants who help me put together and proofread the Newsletter when she gave birth to our third daughter two weeks ago. Being the dedicated editor I am, I still have gotten this issue out on time.

I again thank Jean-Pierre Bissonnette for the excellent job translating the reports from le président du.CCPM.

One important COMP position available in the new year is that of Newsletter Editor, since this is my penultimate issue. I encourage you to apply for this position. You meet a lot of interesting people, the community gets to know you, and you can print up and mail 29 page birth announcements to 300 folk at no cost to yourself.

John Schreiner
McGill University

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INFORMATION EXCHANGE

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HIGH DOSE RATE BRACHYTHERAPY IN NOVA SCOTIA

In the November 1993 issue of the COMP Newsletter an article entitled "High dose- rate brachytherapy at McGill" briefly described the ten year history of McGill's HDR program. The author was interested to know if other Canadian centres had the same experience and if similar approaches to high dose rate treatment were in place. This article has been prepared in response to Mike Evans' request.

The Nova Scotia Cancer Centre (Halifax, Nova Scotia) offers radiation therapy services to approximately 2000 new patients each year. Radiotherapy equipment includes 25 MeV and 6 MeV accelerators, a Co-60 teletherapy unit, an orthovoltage x-ray unit, two simulators, a high dose rate Ir-192 afterloading unit, a low dose rate Cs-137 afterloading unit, and two treatment planning systems. The Medical Physics department presently employs 7 Medical Physicists and 9 support staff and provides radiotherapy physics services to the Cancer Centre as well as imaging physics services to adjacent hospitals.

High dose rate brachytherapy began in Nova Scotia in the spring of 1991 with the purchase of a micro-Selectron Ir-192 HDR unit. Like McGill, we have experienced a dramatic increase in HDR case load since the program's origin. The main focus of our HDR program has been palliative single treatments of the esophagus and bronchus, as well as fractionated treatments of superficial lesions (using surface mounds). Two medical physicists (primary and backup) and a brachytherapy technologist work closely together to implement new treatment setups, particularly for treatment of superficial lesions. The physicist is responsible for treatment planning, source calibration and associated quality assurance checks. The brachytherapy technologist assists with all implant procedures and is responsible for simulation, treatment delivery and daily quality assurance. We are fortunate at the Nova Scotia Cancer Centre in that we have a simulator which has been entirely devoted to brachytherapy and mould room work. This has greatly simplified the acquisition of treatment planning films and the entire HDR procedure.

All HDR treatments, regardless of their simplicity, are planned using the Nucletron Planning System (NPS). We are currently using the NPS-BPS version 12.0 software (for DOS systems), but have recently received the PLATO-BPS+3D version 10.30 upgrade, including the Silicon Graphics workstation. Unfortunately, this new software does not meet our current planning needs and therefore we continue to use the older DOS version. It is hoped that future versions of the PLATO-BPS+3D software will improve its usability.

Single catheter implants usually require less than 20 minutes to plan. Multi-catheter plans generally require 1 to 2 hours to complete depending on the implant and the dose distribution desired. Following the planning stage an independent treatment time program (developed in-house by Dr. Jim Meng) is used to verify the dwell times. This program calculates the dose to specific points in space and compares it with dose point calculations performed by the planning software. Three versions of the program exist, each increasing in complexity (i.e. single straight catheter, single catheter, and multi-catheter).

The following table outlines the HDR case load statistics for 1991 to 1993. This data shows that the most common implants are single catheter, single fraction esophagus or bronchi, and single catheter fractionated gynaecological applications. Most of our gynaecological implants are palliative in intent and utilize a intrauterine or vault applicator. Treatments are generally delivered twice daily for five days. Superficial treatments also make up a large portion of our HDR case load. These treatments generally require a surface mould (vacuum formed cast or wax) and are treated once daily for 5 to 20 fractions.

Site\Year	1991		1992		1993	
	Patients	Rx's	Patients	Rx's	Patients	Rx's
Esophagus	8	8	17	17	23	23
Bronchus	5	5	4	4	9	9
GYN	14	34	18	97	14	100
Superficial	-	-	3	70	6	120
Other Sites*	6	43	7	50	3	34
TOTAL	33	90	49	238	55	286

* Other sites include head and neck, chest wall, prostate and urethra. Fractionation regimes for these treatments vary depending on the site and the attending physician.

Our micro-Selectron HDR and orthovoltage x-ray units are located in the same bunker. This room is equipped with a secondary radiation alarm system (visual and audio) as well as a last man out switch. Daily quality assurance checks verify that the radiation monitors and emergency stops are operable. Source position is also verified daily. In response to recent AECB recommendations (due to the 1992 Omnitron incident) all patients are monitored following their treatment using a hand held survey meter.

Our high dose rate brachytherapy case load continues to grow both in number and complexity. Most

recently, we have implemented a transperineal template implant for treating prostate cancer. This multi-catheter treatment is delivered twice daily for 8 to 10 fractions and is performed prior to external beam radiation. Currently, we are working in conjunction with the Neurosurgery Department of the Victoria General Hospital to devise an HDR treatment procedure for brain lesions.

Crystal A. Plume
Medical Physics Department
Nova Scotia Cancer Centre

Report on the 1992 H.E. Johns Travel Award

At the 1992 meeting of the Canadian Organization of Medical Physicists, which was held in conjunction with the AAPM in my home town of Calgary, I was honoured to receive the third annual H.E. Johns Travel Award. As the COMP meeting was held in August and my teaching commitments resumed in September I postponed the utilization of the award until the summer of this year. My original intent, as per my application, was to study Stereotactic Radiosurgery with a view to an anticipated program here in Edmonton. Some months after the 1992 COMP meeting our Stereotactic program was aborted at the command of the administration and as a result a new topic of study seemed in order. As we are cautiously wading into the great unknown of conformal radiotherapy, I felt this to be the appropriate subject upon which to focus my attention.

In July 1993, it was my pleasure to spend a week as the guest of Dr. Rock Mackie at the University of Madison in Wisconsin where my time was spent investigating their efforts in conformal radiotherapy. Alternating my time between the Clinical Sciences Center and the University of Madison provided a most beneficial balance between practical and theoretical aspects of this subject. During my time at the university I was privileged to have many stimulating conversations with Rock Mackie, Paul Reckwerdt, Joe Deasy, Timothy Holmes and Mark Holms. At the forefront of their activity is Tomotherapy, which I might best sum up as taking the inverse problem to its logical conclusion. Current inverse problems in radiotherapy seek to answer the question: Given a desired dose distribution in a patient, what combination of external beams from conventional accelerators will most closely produce the preferred result? The Tomotherapy approach to the inverse problem takes the solution one step further by asking what sort of external radiotherapy machine design might best produce optimum dose distributions for arbitrary situations. A tomotherapy machine promises not only to deliver highly conformal dose distributions but also to provide on line 3D dosimetry monitoring during dose delivery. While it may seem for some a radical departure from current beam delivery systems, I think it provides the sort of leadership required if the full anticipated benefits of conformal therapy are to be investigated.

Monte Carlo work, in contribution to the Omega project, constitutes another major focus of the University group. This is in collaboration with the Ottawa group which is concentrating on the accelerator side of beam production to determine the phase space description of particles emergent from the accelerator. The Madison group is employing the use of Macro Monte Carlo and Variance reduction techniques to aid the description of beam transport and dose deposition within a phantom. Other active areas of investigation include 3D Radiotherapy Planning, biological modeling and both theoretical and applied aspects of dosimetry.

The Physics team at the Clinical Sciences Center, headed by Bhudatt Paliwal, provided me with a most educational introduction to many practical aspects of conformal therapy as they find expression in the clinical environment. Bruce Thomadsen and Becky Kitchen graciously went out of their way to guide me through the routine activities of High Dose Rate Brachytherapy and 3-D External Beam treatment planning. Of particular interest to me was the simulation of 3-D conformal patients (especially spatial localization registration) and the use of the ADAC treatment planning system. I found their methods and innovations to be well thought out, efficient and effective.

In all aspects this was a most rewarding experience for which I wish to express my gratitude to the college for making it possible and to the Madison Group for making it a reality. Many thanks to my hosts, Rock Mackie, Paul Reckwerdt, Joe Deasy, Timothy Holmes, Mark Holms, Bhudatt Paliwal, Bruce Thomadsen and Becky Kitchen. A special thanks to Rock Mackie for taking time out of his schedule to show me around Madison and coordinate my time to a productive end. Also a special thanks to Joe Deasy for numerous stimulating Physics conversations which reminded me of the necessity to escape as often as possible from the tyranny of clinical captivity into the stimulating realm of the Physics of medical Physics.

Donald Robinson, Ph.D., MCCPM
Cross Cancer Institute

Report on the 1993 H.E. Johns Travel Award

I would like to thank CCPM for awarding me the 1993 H.E. Johns Travel Award for Young Investigator. This award enabled me to visit the Karolinska Institute in Stookholm and the German Cancer Centre in Heidelberg to study the most advanced radiation treatment planning optimization techniques in two countries and indeed world-wide.

During August 1993, I spent four days as the guest of Dr. Anders Brahme and the Department of Radiation Physics at the Karolinska Institute with lots of help from Ann-Charlotte Ekelof. The Department was initially created by Rolf Sievert in 1937 and is now under leadership of Dr. Brahme. This large group of more than twenty-five physicists (including graduate students) are doing impressive works in different areas of radiation physics.

Research is concentrated in the field of treatment planning (Ahnesjo et al.) and optimization especially the famous inverse optimization methods (Brahme, Lind, et al.), dynamic control of MLC (Svensson et al.) and biological modelling (Kallman et al.). Researches also include Monte Carlo simulations (Andreo, Eklof, et al.), transition zone and micro dosimetry (Nilsson, Montelius and Tilikidis, et al.), clinical research using proton (Montelius et al.), and others.

Clinical services are provided (Lind et al.) to the Karolinska Hospital in the field of dosimetry (Lind et al.), treatment planning (Lax et al.). Developmental dosimetry is being carried out on the new race-track microtron with a double focused MLC initially designed by Brahme (Lind et al.). They also provide on-call service for IORT (intro-operative radiation therapy) (Lax et al.) which I unfortunately did not see a complete procedure. An interesting development for cancer treatment that I never heard of in Canada is to use electric current to produce a chlorine environment in tumour from the chloride compounds naturally exist in tissue. They call this electro-chemical treatment.

Teaching is provided to the graduate student in Stockholm University (Nilsson, et al.) that enable them to disseminate the most up-to-date knowledge to the classroom. A two-year course for M.Sc. degree in radiation physics is the formal entry qualifications for a hospital physicist in Sweden. There is also a national secondary standard dosimetry laboratory traceable directly to the international standard in Paris (Lindborg et al.).

My visiting plan was organised by Dr. Patrick Kallman. I got very good opportunities to talk to many hard-working and dedicated staff and students. Throughout the visit, Drs. Kallman, Lind, Lax and the other team members patiently answered all my questions and discussed their research in great details. I was shown through different areas in the Department and the Hospital. Lots of developments concentrated around conformal radiotherapy including biological modelling that enable them to be always in the forefront of this area of research and development. Dr. Anders Ahnesjo is instrumental in the development of the advanced AB Helax treatment planning system that included his award winning pencil beam model for photon dose calculation. Anders Gustafsson showed me the works on a generalized pencil beam algorithm for optimization of radiotherapy. Rogers Svensson described to me how to dynamically control the MLC. Dr. Lind toured me through their areas of clinical development including the Gamma knife and the surprisingly compact race-track microtron (at least much smaller than what I had imagined). I think this is the same model as the one Moira saw in Memorial Hospital. Dr. Brahme talked to me in his office. He answered and explained lots of questions in details. Dr. Lax showed me their latest Helax treatment planning computer and the initial preparation of IORT. Chris Iacobeus helped me to explore the anatomy of their "banana" detector for radiotherapy computed tomography verification and transit dosimetry.

The German Cancer Centre in Heidelberg has the largest radiation physics group in the country led by Dr. Schlegel and is well funded. In general, the radiation research seems not well funded in proportion to health budget as compared to North America. The other interesting observation was that this research group does not have as close relation to the radiotherapy facility as in North America. In other wards, the German Cancer Centre is only for research and normally will not provide any patient service. Most patients are treated in hospitals at least one kilometre away.

I was entertained by Dr. Thomas Bortfeld. I got to know him when I had a working vacation during last Christmas at M.D. Anderson in Houston. Dr. Bortfeld developed an interesting way to compute beam profiles by the techniques of inverse CT (filtered-projection method). That method is similar to that of Brahme, but not the same. They are also using a home-made MLC in the different way. They use a insert of the intended radiation field and then move the MLC to conform with that insert. Dr. Bortfeld toured me through their computer facility and the machine shop where the MLC was made. He showed me in detail his treatment planning optimization system using the filtered-projection method. I also observed the operation of their clinical treatment planning

system in a nearby radiotherapy centre. They have three linacs and one Co-60. Each machine will treat about sixty patients per eight-hour-day. Each treatment planner will do about two cases per day. One physicist will coordinate and take these plans to doctors for approval and get feed-back for any revisions. My visit to this centre had to be cut to one day instead of two days as I brought a cold from the Scandinavian.

These trips strengthened my interest in conformal radiotherapy physics. I am very appreciative to CCPM for giving me such opportunity. Many thanks go to my hosts in the Department of Radiation Physics at Karolinska: many Anders including Prof. Brahme and Dr. Ahnesjo, Ann-charlotte Ekelof, Patrick Kallman, Bengt Lind, Ingmar Lax, Shi Liu and others; in the German Cancer Centre: Drs. Thomas Bortfeld, Wolfgang Schlegel and the gang, for their cooperation and kindness shown during my visit. A special thanks to Shi Liu and his wife for the nice Chinese dinner in their home. Thanks also go to Thomas and his fiancee for the opportunities to experience the German hospitality and great German cuisine.

Yunping Zhu, Ph.D., M.C.C.P.M.
Ontario Cancer Institute

A Report from the Professional Affairs Committee

Dr. John Aldrich	Ms. Karen Breitman
Dr. Ian Cunningham	Ms. Maryse Mondat
Dr. Peter Raaphorst	Dr. Peter Dunscombe

The Professional Affairs Committee of COMP held its main Annual Meeting on 5th March 1994 in Ottawa. This brief report covers the main current areas of activity of the Committee.

1. To enable the PAC to function effectively and with the minimum of administrative–hassle a request is being made to the COMP Executive for a PAC budget. The major expense will be the cost of the PAC's Annual Meeting but it will also include the provisional of secretarial support particularly for the Professional and Personpower Surveys.

2. The 1993 Surveys will be initiated shortly and will employ a similar format to that used for 1992.

3. The PAC is recommending for endorsement by the COMP Executive a Medical–Physics Staffing Standard for support of Radiation Therapy. Once approved this will be disseminated.

4. Staffing Standards for Medical Imaging support are under development.

5. The PAC will be recommending that a budget be established for activities to celebrate the Xray Centennial. Our intention is to produce a poster highlighting the contribution of Radiation Physics to Medicine for mass distribution and to develop a Press Kit to facilitate media coverage.

6. A statement defining the role and function of Canadian Medical Physicists in the support of Radiation Therapy has been prepared. Once approved by the COMP Executive this will be disseminated. The primary value of this document at this time is likely to be its use as an educational tool for employers.

7. The issue of professional liability insurance for Medical Physicist provoked considerable discussion. It seems unlikely that institutional coverage provides adequate protection as evidenced by the events which will be described by Maryse Mondat in a future contribution to this Newsletter. The PAC will continue to investigate this issue

8. Moves by Professional Engineering groups onto our turf were another cause for concern. Karen Breitman will be discussing this issue in a contribution to the Newsletter

9. Some Medical Physicists are under pressure to develop a Workload Measurement Scheme. It would clearly save effort and lead to greater consistency if a national recommendation on this issue could be developed. The PAC is looking into this with the intention at this time of linking Workload Measurement to the functions specified in the draft Role Statement.

The PAC will meet again in conjunction with COMP's Annual Meeting in Toronto in September. If you have any comments on our current areas of activity or would like us to deal with any other issues please feel free to contact any of us.

Peter B. Dunscombe
for the Professional Affairs Committee
7th March 1994

Medical Physics Consulting

With increasing pressure on the salaries of Medical Physicists many are engaged in or considering consulting as a means of maintaining their income. This issue was discussed at a recent meeting of COMP's Professional Affairs Committee resulting in the following comments and observations.

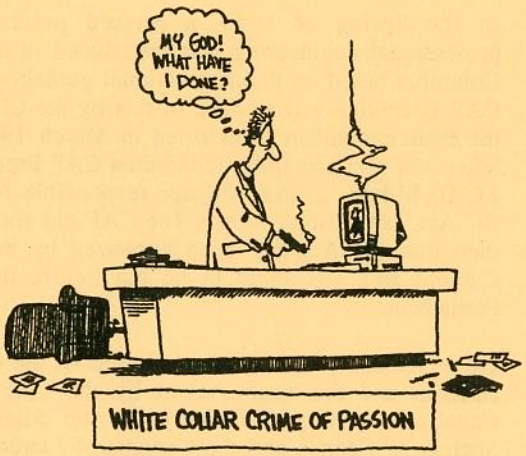
1. Considering rates south of the border, those charged by service personnel and a guess at what the market will bear $125 per hour would seem a reasonable average rate for Medical Physics consulting.

2. Costs of travel both in terms of the consultants time and other expenses should be factored into the total fee. Reasonable amounts for these items will have to be determined according to local circumstances.

3. Consulting carries with it certain risks. Consultants should satisfy themselves that they are happy to accept these risks or alternatively they should investigate obtaining professional liability insurance and any additional coverage required for equipment, vehicles, etc.

The PAC will no doubt be returning to this issue in the future. If COMP members have any additional comments, suggestions or information the PAC would like to hear from you.

Peter B. Dunscombe
for the Professional Affairs Committee
March 1994



Recently there has been proposed legislative initiatives that could severely limit the practice of natural scientists in Canada. The Canadian Association of Physicists (CAP) is very concerned about these developments and the article below was published in *Physics in Canada* to address the issue. The authors and the CAP have kindly agreed that we may reprint the article to inform our membership. We acknowledge them and *Physics in Canada* for permission to publish.

A Status Report on the Action of the CAP, and other Science Societies, to defend the Natural Science Professions in Canada

by: Peter Kirkby, Ann C. McMillan, J. C. Douglas Milton, Roger A. Lessard and Paul S. Vincett

1. SUMMARY

The CAP is leading a major effort by natural scientists to stop proposed legislative revisions to engineering acts which could destroy the natural science professions in Canada as we know them. There have been some important initial successes, but much work remains.

The Canadian Council of Professional Engineers (CCPE) has developed a new definition of the practice of professional engineering which encompasses what most physicists and many other natural scientists do. Provincial engineering associations are preparing new engineering acts which would make it illegal for non-engineers to perform such tasks. When the CAP became aware of the situation, the first such act (in BC) was only weeks away from becoming law. The acts could impact on virtually all physicists: unless you were a Professional Engineer, it would be illegal to perform almost any activity which involves the use of scientific principles and which impacts economic interests, property, public welfare, or other very broad areas. Directing or managing such activities would be also illegal, unless you were a Professional Engineer. This could directly affect all applied and industrial and most government physicists. Since the management of all such technical teams would apparently have to be done by Professional Engineers, the effect on university physics enrollments, and thus on university physics itself, could be profound.

The CAP first mobilized the efforts of the scientific community to deal with the immediate BC problem. The proposed changes there have been stopped for

now and efforts are underway to get a broad independent review of the whole topic in BC. Other provinces are being monitored and have been told that the CAP will vigorously oppose the new definition. Nationally, the CAP convened a meeting between seven national scientific societies and the CCPE. The parties agreed to set up a working group, convened by the CAP and the CCPE, to discuss how the engineering definition might be amended. Even if agreement is reached, however, provincial and territorial engineering associations may change their own definition in their acts. The CAP will therefore need to remain heavily involved in this issue for many years.

2. INTRODUCTION

In Canada, there are twelve professional engineering associations; one for each province and territory. Each association has the authority to regulate the local engineering profession and control the local practice of professional engineering. The practices are exclusive, that is, no one may practise without being a member of the association. In Ontario, you could suffer a fine up to $15,000 for a first offense, such as practising professional engineering without a license, and up to $30,000 for subsequent offences. The Canadian Council of Professional Engineers (CCPE) is the national body coordinating the interests of the professional engineering community, but having no direct regulatory authority. The members of the CCPE are the twelve professional engineering associations. In 1987, the centennial year for engineering in Canada, the CCPE set up a Task Force to look into the future of engineering in Canada. The Task Force issued a report in 1988 (1) which provided recommendations on the way in which the practice of engineering should be defined throughout the country. The recommendations included the following:

a) Encourage the provinces to amend their Professional Engineering Acts by broadening the definition of engineering work to encompass the management and application of technology.

b) Expand the notion of public protection as a key element of decision-making in the practice of professional engineering to incorporate its social, economic, environmental, cultural, and political ramifications and consequences.

3. THE DEFINITION OF PROFESSIONAL ENGINEERING

As a result of the recommendations by the Task Force, the CCPE established a committee on professional issues to develop a national guideline on the definition of the practice of professional engineering. In 1990, the committee released the following national guideline on the practice of professional engineering (2):

- any act of planning, designing, composing, evaluating, advising, reporting directing or supervising, or
- managing any of the foregoing
- that requires the application of engineering principles, and
- that concerns the safeguarding of life, health, property, economic interests, the public welfare or the environment.

This definition was directed to the autonomous provincial and territorial engineering associations. It should be compared to the Ontario definition introduced in 1984:

- any act of designing, composing, evaluating, advising, reporting, directing or supervising
- wherein the safeguarding of life, health, property, or the public welfare is concerned and
- that requires the application of engineering principles, but
- does not include practising as a natural scientist.

The 1984 Ontario definition included a fundamentally new element: the protection of the public interest. Previously it was in the body of the Ontario Act, but not in the practice. However, the definition was flawed, as originally proposed. "Engineering principles" could not be distinguished from "scientific principles". Scientific societies, with the CAP taking a lead role, objected. The CAP put forward the exclusion clause in the practice: "but does not include practising as a natural scientist." This was accepted and has been there since 1984 (3-5). As a result of the situation in Ontario, the CAP set up a Committee on Professionalism, having as one of its duties that of informing the CAP Executive of changes to practices that may infringe on the practice of physics.

4. THE BC ENGINEERING ACT

In the Spring of 1993, a revised practice of professional engineering was introduced in British Columbia based on the new national guideline. The CAP Executive was advised of this by the Chair of the Professionalism Committee in March 1993. A letter was sent promptly by the then CAP President, J.C.D. Milton, to the Minister responsible for the BC Act, expressing concern. The CAP did not know then that the Act had been approved by the BC Cabinet and was about to be put before the BC Parliament.

Other science societies were advised of the CAP's concern and the action taken by the CAP. The Canadian Society of Chemistry, the Statistical Society of Canada and the Canadian Federation of Biological Societies wrote to the Minister expressing concern. It was not until the second science society

wrote that the CAP had a reply from the Minister. The reply, dated 23 June 1993, stated that it was unlikely that the bill would be proceeding during the current Legislative Session.

There was immense pressure on the CAP to meet with the CCPE, and the Association of the Professional Engineers and Geoscientists of British Columbia (APEGBC). The CAP took the position that the issue went far beyond that of physicists and engineers. It involved the scientific community. It involved the community of technicians and technologists. It involved the entire community of employees when "managing" was included in the exclusive practice. It had a direct bearing on the economic interests of the province.

5. THE NATIONAL GUIDELINE

The CAP and the CCPE agreed to meet on Sunday, 3 October 93, in Toronto. The CAP had approached many science societies and invited them to be present at the meeting. Representatives of the science societies met the day before to gain some background on the law covering self-regulation in Canada and address the national guideline on the practice of professional engineering. This led to scientists addressing their concerns over the national guideline and the impact it would have on their own professional identity.

The science representatives identified many problems with the proposed national guideline, and with the way in which engineering acts operate.

- Engineering principles cannot be distinguished from scientific principles, and most work impinges on "economic interests" and the "public welfare". Thus, a large proportion of work in the natural sciences would be illegal unless performed by a Professional Engineer. Even "pure" science could be drastically affected, since the reduced job opportunities could cause science enrollments to plummet.

- The introduction of the "managing" language could require that almost all technical teams be directly managed by an engineer, and that several layers of management above this level be filled with engineers.

- In addition to the obvious natural sciences affected, such as physics, chemistry, biology etc, most work in disciplines such as statistics, mathematics, meteorology, oceano-graphy, and computer science would be off-limits to non-engineers.

- The exclusion of non-engineers from all engineering activities is in any case not necessary to safeguard the public, and is not done in the US or the UK. Only specific areas of engineering really need to be regulated: consulting work, where there is a direct interaction with the client, and specially designated areas, where there is a clear need for competency.

- No Professional Engineer could be competent in the totality of engineering, yet every Professional Engineer is licensed to practise in all areas covered by the definition.

- Professional Engineers are not the sole protectors of the public safety in the technical arena.

- Although the reason for providing the sole right to practise is the protection of the public interest, the public at large had no say over the new definition.

There were seven science societies represented at the meeting with the CCPE on 3 October:

1) Association of the Chemical Profession of Ontario (ACPO),
2) Canadian Association of Physicists (CAP),
3) Canadian Federation of Biological Societies (CFBS),
4) Canadian Mathematical Society (CMS),
5) Canadian Meteorological and Oceanographic Society (CMOS),
6) Canadian Society of Environmental Biologists (CSEB) and
7) Statistical Society of Canada (SSC).

The Canadian Society for Chemistry (CSC) and the Canadian College of Physicists in Medicine (CCPM) had been at the meeting the previous day, but were unable to be present for the meeting with the CCPE. The CAP invited representatives from the Ontario Association of Certified Engineering Technicians and Technologists. The CCPE took the position that they should not attend as there were continuing discussions with the technicians and technologists. OACETT representatives did not attend.

At the meeting with the CCPE, both groups presented an explanation of their position. The groups agreed that a working group be set up. The first meeting of that group, convened by the CAP and the CCPE, is scheduled for mid-November. Hopefully it will lead to a much more constructive relationship between the parties.

6. THE PRESENT SITUATION

In British Columbia, the first province in which a revised practice based on the national guideline made it to a Cabinet Committee, the new definition of professional engineering would have become law had the CAP not mobilized the scientific community. Pressure from the APEGBC was so great that a

revised act was in fact passed, in spite of the CAP being led to believe that it would not proceed. However, a key concession was obtained: the revised definition of the practice of professional engineering was removed and the old one retained.

While this is an encouraging interim outcome in BC, it would appear logical and fundamental that an exclusive practice, addressing the public interest and involving so many groups, should be examined publicly, before it is accepted by any province or territory in Canada. The CAP has been clear throughout that the revised practice was an issue that involved many groups. A proposal to have a broad review in BC was put forward by the Head of the UBC Department of Computer Science, Maria Klawe, by letter on September 4, 1993 to the Premier of BC. The CAP continues to support a broad review, and subsequent to the meeting with the CCPE, the CAP sent a strong letter to the responsible BC minister advocating it.

7. WHAT YOU CAN DO TO HELP

This is a national issue which will be with us for many years. Any of the provinces or territories may, at any time, introduce revisions to the local practice of professional engineering. Both Alberta and Saskatchewan are known to have been considering revised legislation for some time, and Ontario and Quebec are likely to do so before long. The President of the CAP has written letters to all 12 jurisdictions expressing concern over the national guideline and requesting that the CAP be informed of any contemplated changes to their engineering acts, and all have now replied.

Even with this action, it is important to understand that there is no guarantee whatsoever that the CAP will in fact be informed of upcoming changes to engineering acts. As this article was being finalized, the CAP found out (via a routine enquiry) that a new Saskatchewan Act, based essentially on the national guideline, had advanced quickly and was now poised to move rapidly towards the legislative process. The CAP had to make representations in less than 24 hours to a key meeting that included cabinet ministers and civil servants. Midnight faxes, however, are not a good way to conduct this kind of business!

- We need you to keep a close eye on what your provincial or territorial government is doing in this area, so that we have reasonable time to respond.

In addition to monitoring what your provincial or territorial government is doing, what else can you do?

- If you are a physicist at a university, show this article to your Department Head or Dean and encourage them to write to the premiers, as the Dean of Arts and Science and Department Heads in the natural sciences at Queen's University have just done.

- If you are a physicist at work in industry or with the government, ask your senior management to make their concerns known to your provincial or territorial government.

- Whenever you have the chance, show this article to a potential member of the CAP to demonstrate what the CAP is doing for the physics community. We need all the support possible in membership. It helps to have a high membership when we make a position before a legislature. It helps to have the resources, both in finances and ideas. Please do your share. If the CCPE definition of the practice becomes law throughout Canada, the effect on all scientists could be severe.

- We, therefore, suggest that you as well show this report to your fellow scientists and encourage them to join their science society.

The scientific community must assert itself, if it is to survive as a viable entity in Canada.

References

1. "The Future of Engineering". A special report prepared on behalf of the Canadian Council of Professional Engineers by the Task Force on the future of engineering in association with Employment and Immigration Canada, July 1988.
2. "Professional Engineering Practice in Canada", Canadian Council of Professional Engineers Guideline.
3. "The Ontario Professional Engineers Act", Physics in Canada, Vol 40 (1984), p 50.
4. "Comments Regarding Bill 123, An act to Revise the Professional Engineers Act", Physics in Canada, Vol 40 (1984), p 50.
5. "The Professional Status of the Physicist and Other Natural Scientists in Canada", Physics in Canada, Vol 40 (1984), p 113.

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Newsletter Announcements

Addresses for Submissions:

Submissions should be sent to

L. John Schreiner
Medical Physics Department
Montréal General Hospital
1650 Avenue Cedar,
Montréal, QC.
H3G IA4

tel: (514) 934-8052
fax: (514) 934-8229
E-mail can be sent to me at McGill University at:
JSCHREINER@MEDPHYS.MGH.MCGILL.CA.
or
CXLS@MUSICA.MCGILL.CA

When making Submissions to the Newsletter, please confirm that your submission arrives at our office by phone or FAX.

COMP/OCMP Corporate Membership

The Canadian Organization of Medical Physics would like to acknowledge the support given in the past year by our corporate members :

Gammex-RMI

Keithley

Kodak Inc.

Oldelft

Theratronics

Varian

We hope to continue our association with these and new corporate members in this new year. To encourage this affiliation we are implementing new benefits for our corporate members.
Details are available from the COMP office.

Newsletter Submissions
Format for contributions:

Articles for the Newsletter are best submitted by E-mail or on computer disk. The Newsletter is produced on a MacIntosh computer so submissions must be on Mac compatible disks or on 31/2 inch IBM disks *in text or ASCI* format. Please send a hard copy by mail or FAX so that any symbols or special characters can be verified.

Good print quality submissions are also welcome. Newsletter articles should be single column on 8 1/2 by 11 inch paper with suitable margins on all sides. Contributions should be double spaced in a clear font or type (not dot matrix), the font size / pitch should be ≥ 12 to facilitate scanning and reading with OCR software. Please end your submission with your name and institution. Advertisements should be submitted camera ready for direct reproduction in Newsletter.

FAX submissions must be supported by original copy and will not be used directly.

DEADLINE FOR NEXT ISSUE OF THE COMP NEWSLETTER

The next Medical Physics Newsletter will come out in late June. Please submit articles by the third week of May.

PRESIDENT'S PODIUM

A. CCPM Symposium and joint meeting with COMP

By the time you receive this Newsletter you should have received the call for abstracts and the announcement of the upcoming CCPM/COMP Symposium and our joint annual meeting which is to be held September 15-18, 1994. The meeting this year is a new venture in that we are meeting jointly with the Canadian Association of Radiation Oncologists (CARO) who always meet with the Royal College of Physicians and Surgeons of Canada. The meeting will be held at the Metropolitan Convention Centre in Toronto and happens to be adjacent to the CN Tower and the Skydome. We are extremely pleased with the joint CCPM/COMP/CARO Symposium that will held on Thursday September 15, 1994. In preparation for the centennial of the discovery of x-rays by Roentgen, the theme is "Approaching 100 Years in Medical Physics and Radiation Oncology: Past, Present and Future". We have invited 11 high profile speakers from the Medical Physics, Radiation Oncology and Radiation Biology community in Canada. One component of the Symposium will review historical contributions of Canadians. A major part of the meeting will address the present state of the art of Medical Physics and Radiobiology and their impact on Radiation Oncology. The final component of the meeting will address the future and what we might expect of Medical Physics, Radiobiology and Radiation Oncology by the year 2010. This section will end with a panel discussion with a Medical Physicist, Radiation Oncologist and Radiation Biologist who will project the importance of the relative components of these disciplines by the year 2010.

We anticipate a large attendance at the proffered papers sessions on September 16, 17, and 18, 1994. A joint proffered papers session will be held with the Radiation Oncologists. Opportunities will be provided to participate in each other's sessions. Furthermore, the Royal College, on the basis of our participation in their meeting, has made their theme "Roentgen's Legacy: Imaging and Therapy". We will also have opportunities to attend some special Royal College invited speakers including a couple of Noble Prize winners. Certainly, this meeting presents some interesting opportunities to broaden our perspective and, perhaps more importantly, to enhance our profile amongst the broader medical community. This is a win-win opportunity of which we should take full advantage.

The social program includes a wine and cheese reception with our Radiation Oncology colleagues on Thursday and a dinner of the COMP/CCPM attendees on Friday. Accommodation ranging from low cost residences to high cost hotels make this meeting amenable to all budgets. In summary, we highly recommend that you participate in this meeting which should be of excellent value to a wide range of interests.

B. CCPM December 1993 Board Meeting

The CCPM Board met in December of 1993. A few items are listed to highlight our deliberations. Certainly, more details will be forthcoming especially at our annual general membership meeting (AGM) in September in Toronto. Perhaps, these highlights are best summarized in point form.

1. The CCPM examination format has been restructured to enhance assessment of competence in clinically relevant medical physics.

2. A greater emphasis will be placed on radiation protection issues on the written exams.

3. The recertification proposal is effectively complete and should be ready for discussion and approval at the upcoming AGM.

4. A proposal has been made to restructure the executive so that the task of Secretary/Treasurer is separated from the Registrar's activities. This also will be presented for bylaw changes at the upcoming AGM.

5. The formal CCPM registry is approaching completion.

6. Mammography accreditation for medical physicists is in the process of being implemented.

7. The CCPM was asked by some Canadian Dosimetrists to help them formalize their professional status in Canada. A subcommittee was struck to deal with this issue.

8. As you will probably read elsewhere in this issue a joint COMP/CCPM secretariat has been proposed to aid with some of the routine administration of both the COMP and CCPM affairs. This should help both of our organizations provide a more efficient and professional approach to our activities.

9. A variety of other issues related to other organizations was also discussed. One of these relates to Professional Engineering Practice and is very well described in the reprint of the article by Peter Kirkby et al. in this edition of the Newsletter. It should be recognized that unless carefully monitored and controlled, this issue could

have substantial long-term ramifications for all practicing natural scientists in Canada.

In conclusion, I would once again encourage all of you to participate in the upcoming annual meeting in Toronto. It should prove to be an exciting, multi-disciplinary, medically-oriented, physics meeting.

Jake Van Dyk
President, CCPM

Le Podium du Président du CCPM.

A. Symposium Scientifique du CCPM et Congrès Conjoint du CCPM/OCMP.

En ce moment, la distribution de la brochure annonçant le prochain congrès conjoint du CCPM/OCMP, qui aura lieu du 15 au 18 septembre 1994, devrait être complétée. La brochure comprend un formulaire de soumission pour une présentation scientifique orale. Cette année marque une première puisque notre congrès se déroulera conjointement avec l'Association Canadienne des Radio-Oncologues (ACRO), qui se réunissent avec le Collège Royal des Médecins et Chirurgiens du Canada. Le congrès se tiendra à Toronto, au "Metropolitan Convention Centre", situé tout près de la Tour CN et du Skydome. Il nous fait extrêmement plaisir d'annoncer le symposium conjoint du CCPM/OCMP/ACRO, qui aura lieu le jeudi 15 septembre. En vue du prochain centenaire de la découverte des rayons x par Roentgen, le symposium aura pour thème "A l'Approche de Cent Ans de Physique Médicale et de Radio-Oncologie: le Passé, le Présent, et le Futur". Nous avons invité onze conférenciers de haut calibre des communautés canadiennes de la Physique Médicale, de la Radio-Oncologie, et de la Radiobiologie. Le symposium comporte trois parties. La première présentera un historique des contributions canadiennes à la radiothérapie. La seconde résumera les techniques de pointes en Physique Médicale et en Radiobiologie, de même que leur impact sur la Radio-Oncologie. La troisième partie s'intéressera au futur, et aux progrès attendus de la Physique Médicale, de la Radiobiologie, et de la Radio-Oncologie pour l'an 2010. Le symposium se terminera avec une discussion avec un panel comprenant un Physicien Médical, un Radio-Oncologue, et un Radiobiologiste. Ceux-ci spéculeront sur l'importance des composantes de leurs disciplines respectives pour l'an 2010.

Nous nous attendons à une assistance nombreuse lors des sessions scientifiques du 16 au 18 septembre 1994. Nous avons planifié une session scientifique conjointe avec les Radio-Oncologues, et tous pourront assister aux sessions de l'un ou de l'autre. D'ailleurs, le congrès du Collège Royal, basé sur notre participation à ce congrès, aura pour thème "Le Legs de Roentgen: Imagerie et Thérapie". Nous pourrons aussi assister aux sessions préparées par le Collège Royal, dont certaines sessions spéciales présentent quelques lauréats Nobel. Nous pourrons certainement profiter de ce congrès pour élargir nos horizons et améliorer le profil et l'importance des Physiciens Médicaux dans la communauté médicale. Ce congrès est donc une opportunité dont nous nous devons de pleinement bénéficier.

Le programme social comprend une réception vins et fromages avec nos collègues Radio-Oncologues le jeudi, ainsi qu'un dîner des membres du CCPM/OCMP le vendredi. Les participants peuvent compter sur un choix varié d'hébergements, à partir des résidences étudiantes à prix modique jusqu'aux chambres d'hôtel de luxe, et qui devrait donc satisfaire tous les budgets. En conclusion, nous vous recommandons très fortement de participer à ce congrès de haut calibre et aux intérêts variés.

B. Réunion de l'exécutif, décembre 1993

L'exécutif du CCPM s'est réuni en décembre 1993. Je liste ici les quelques items qui ont marqué nos délibérations. Plus de détails seront disponibles plus tard, et particulièrement lors du congrès annuel des membres à Toronto, en septembre prochain. Je liste ici seulement les items principaux.

1. L'examen du CCPM a été restructuré afin d'améliorer l'examen des compétences acquises en physique médicale clinique.

2. Le Collège augmentera l'importance des questions sur la Radioprotection pour les examens écrits.

3. On a complété la proposition concernant la recertification, et les membres auront l'occasion de la débattre lors du congrès général.

4. On a proposé une modification à la structure de l'exécutif: les tâches de secrétariat et de trésorerie ne seraient plus du domaine du registraire. Ce changement aux règlements du Collège sera aussi proposé aux membres.

5. Le registre des membres du CCPM est presque complété.

6. La mise en marche du programme d'accréditation des Physiciens Médicaux en mammographie achève.

7. Quelques Dosimétristes ont demandé l'aide du CCPM afin de formaliser leur statut professionnel au Canada. Le CCPM a formé un sous-comité pour traiter de la question.

8. Tel que cité ailleurs dans ce Bulletin, on a proposé de combiner le secrétariat du CCPM a celui de l'OCMP afin d'aider l'administration des deux organismes à développer une approche plus efficace et plus professionnelle.

9. D'autres sujets de discussion impliquant d'autres organisations ont été présentés. L'un d'eux concerne la Pratique Professionnelle du Génie, qui a été très bien décrite dans l'article de Peter Kirkby et autres, reproduit dans cette édition du Bulletin. Il faut reconnaître que, à moins de la surveiller et de la contrôler de près, la Pratique Professionnelle du Génie pourrait avoir des ramifications à long terme sur la pratique des sciences naturelles au Canada.

Pour terminer, je voudrais de nouveau vous encourager à participer en grand nombre au congrès annuel de Toronto. Ce congrès devrait être un congrès de physique excitant et multidisciplinaire.

Jake Van Dyk
Président, CCPM

Medical Physics E-mail Server List

A Canadian based electronic mailing list of medical physicists has been established in London through the efforts of Trevor Cradduck.

In order to be included on the list please send an e-mail message to: cradduck@uwo.ca and in the Subject: line put the words "subscribe canada-l" (that is an ell for List, not a one). The rest of the message can be left blank (it will be ignored anyway!).

If you have any comments about the use of the list, or to what use it should be put, please send these in a separate message (with a different Subject:!).
Thank you for your cooperation,

REPORT OF THE COMP CHAIR

The COMP executive met in Montreal on December 5, 1993 to discuss a number of issues including methods to make COMP pro-active and increase its visibility and activities. Based on the discussions at the AGM in Ottawa, it was clear that COMP has sufficient funds to begin to use them for worthy activities. Thus, the following activities have been implemented:

1) A COMP Awards Committee (CAC) has been established with Dave Rogers, as Chair and Mike Patterson and Dick Drost as members. This committee is charged with awarding:

   i) travel awards to attend the COMP Annual Meeting; and,
   ii) establish a mechanism and award 1st, 2nd and 3rd place prizes to best papers by young investigators at the Annual Meeting.

2) In a number of Annual Meetings in which COMP met with another organization, issues dealing with the COMP program, what the membership wants to get out of the meeting and a sense of future direction, were all secondary and missing. Since the nature and quality of our Scientific Program is so important to us, it was agreed that we must take control of our own Scientific Program. Until now, the scientific program was the responsibility of the Chair elect who changed from year to year, leading to a situation requiring reinventing the process every year and no sense of the future.

   Thus, the executive has established a Scientific Program Committee (CSPC) to take control of our own meeting and establish an identity and future. Current committee members are: Chair elect, current COMP Chair, Past Chair, a member from the local arrangement committee (Van Dyk) and a member form the COMP membership (Paul Johns). The committee will meet annually at the COMP Annual meeting to establish policy, review the current meeting, and make recommendations for future meetings.

3) COMP will support an E-mail burster, which will be generously run by Dr. Trevor Cradduck. This Burster will be used to bring the membership closer together by establishing a fast manner for communications, job placements, problem solving, graduate student and summer student postings etc. If we all participate, this facility can be of great importance to the membership for information exchange, as well as saving money on COMP mailings. Trevor has already requested everyone's e-mail address. Please respond.

4) The executive, together with the CCPM, has begun to explore the establishment of a permanent secretariat. COMP now runs their secretarial functions across the country with distributed responsibilities and no continuity when executive members change. The executive believes that a permanent central secretariat will ensure that COMP business is carried out properly and not forgotten from year to year. Final approval of establishing a secretariat will be done at the AGM.

5) The executive has encouraged the Professional Affairs Committee to have a mid-year meeting in addition to a meeting at the Annual Meeting. This committee is of utmost importance to COMP, since its decisions and recommendations will affect our activities and how they are regarded by our professional colleagues.

6) The executive has begun to formulate a Travel Policy for travel of COMP members to its mid-year committee meetings. We are all aware that travel across Canada can be expensive and that travel expenses should be minimized. However, some committees (e.g., Executive, Professional Affairs) must meet mid-year to ensure that COMP affairs and business is carried out. Thus, a clear Travel Policy will ensure that the costs will be minimized and that travel will only be to necessary meetings.

7) The executive began discussions on the nature of our Annual Meetings. Based on the success of 2 earlier meetings in which COMP/CCPM met without any other organizations, it was generally felt that this kind of meeting should be repeated every few years. A policy regarding this is still under discussion.

Clearly, these actions are steps toward an active COMP organization. With the active participation of so many able Medical Physicists our organization will continue to flourish.

Aaron Fenster, Ph.D., F.C.C.P.M.,
Chairman, COMP/OCPM

Van Oech's Law: *An expert really doesn't know any more than you do. He is merely better organised and has slides.*

QUALIFIED MEDICAL PHYSICIST IN MAMMOGRAPHY

The Canadian Association of Radiologists Mammography Accreditation Program got underway in September 1992. With the exception of few minor modification, the content is virtually identical to that of the US Program. One role of the medical physicist, in this program, is to perform audits of mammography system performance.

The notion of "Qualified Medical Physicist in Mammography" as mentioned in the CAR Program raised the issue of identifying individuals being qualified. A committee has then been created by CCPM with the mandate of:

1- defining the education and experience requirements to be a qualified mammography physicist.

2- developing education programs to increase the number of qualified mammography physicists

3- developing continuing education programs to maintain the certification status of qualified mammography physicists

4- maintaining a registry and administrating this qualification process.

As a first step, a course entitled the physics of Mammography has been provided by the Dr. Martin Yaffe and his colleagues in September 1993.

A second step will be to identify people having qualification and, for that, a process is put forward. We encourage people interested in mammography to apply.

The Members of the Committee are:

Raymond Carrier, chairman
Dr. Ian Cunningham
Dr. Martin Yaffe
Mr. Cupido Daniels

Application Process for Accreditation in Medical Physics of Mammography

Individuals who wish to be accredited in the Medical Physics of Mammography should have the following **credentials:**

1. Certification in diagnostic radiological physics by the Canadian College of Physicists in Medicine (CCPM), or by the American Board of Radiology (ABR), or by the American Board of Medical Physics (ABMP)

or

2. A post-graduate degree in physics or related discipline from an accredited institution and have demonstrated experience in diagnostic radiological physics as determined by the CCPM.

Individuals who wish to apply for accreditation in the medical physics of mammography should **send their applications to the chairman of the Mammography Accreditation Committee.**

The application should include:

a) An up to date curriculum vitae
b) Evidence to show competence at evaluation of a mammographic facility, including:
   i) An example of all the raw data collected and films obtained at the time of a mammography unit inspection.
   ii) The final report of the inspection outlined in (i).

It is recommended (but not mandatory) that the first inspection be done under the supervision of an accredited Medical Physicist in Mammography.

The following are the **requirements for accreditation:**

1. The applicant will be familiar with material covered in the RSNA Syllabus: "A Categorical Course in Physics. Technical aspects of breast imaging" as well as other key works on this subject.
2. The applicant will demonstrate that he/she has access to appropriate equipment to perform the required tests on mammographic units. If not owned by the applicant, formal approval of the owner will be required.
3. The applicant must undergo an examination to assess his/her practical and theoretical knowledge of mammography medical physics. The applicant will have to perform some measurements on a mammography unit in the presence a member of the examination committee.

Accreditation is for three (3) years. To maintain accreditation, attendance of at least 15 hours of continuing education on relevant matters in mammography during these three years is required.

FEES to the order of "CCPM": $ 25. at the time of application
$ 100. at the time of examination.

Medical Physics Theses and Abstracts

Each year graduate students write M.Sc. and Ph.D theses which are full of detailed analysis and basic insights rarely covered in the literature. As in the past two years the Medical Physics Newsletter plans to recognize this work with a review of graduate work in *the summer 1994* issue of the Newsletter.

Please submit **work completed in 1993** to the Newsletter office as soon as possible. Because of the large volume of work which must be processed by this office, **all reviews of students' work should be sent as computer ready submissions (e-mail or 3 1/2 in floppy disks as specified in Newsletter Announcements) . FAXed submissions will not be accepted except as verification.**

Submissions should include the name of the institute and department at which the work was done, the name of the author and thesis title, the degree received, the thesis abstract and the name of the research supervisor. Examples can be seen in the June 1992 and 1993 issues of the Newsletter.

To date we have received only 5 abstracts for the report. We look forward to your submissions.

Calendar of Events

The following schedule of meetings has been gathered from a variety of sources (mainly the Nuc Med mailing list on e-mail). Readers are invited to submit material for inclusion in the calendar.

24-27 April 1994, ARLINGTON, TX
Assessing impact of nucl facilities on human health and environment
Contact: Randall Hanne, TU Electric, 400 N Olive, LB-81, Dallas, TX 75201

1-5 May 1994, VANCOUVER, BC
CMBEC 20 CCGB
Contact: CMBEC Secretariat, 837 Eastvale Dr. Glouchester, ON, K1J 7T5, (613) 993-1686

5-8 June 1994, ORLANDO, FL
41st Annual SNM
Contact: SNM, 136 Madison Ave, New York, NY 10016-6760

24-28 July 1994, ANAHEIM, CA
35th ann mtg AAPM
Contact: AAPM Exec Office, 335 East 45th St, NEW YORK, NY 10017

24-29 July 1994, SAN DIEGO, CA
MATHEMATICAL METHODS IN MEDICAL IMAGING III
Contact: SPIE, PO Box 10, Bellingham, WA 98227

6-12 August 1994, SAN FRANCISCO CA
SMR (formerly SMRM) 2nd Meeting
Contact: SMR, (510) 841-1899

20-26 August 1994, RIO DE JANEIRO, Brazil
World cong of med phys
SEE MATERIAL ENCLOSED IN THE MAILING OF THIS ISSUE OF THE NEWSLETTER

13-18 September 1994, TORONTO, ON
COMP/CCPM ann mtg with CARO

23-28 October 1994, SYDNEY, Australia
6th World congress nucl med & biol
Contact: Congress Secretariat, GPO Box 2609, Sydney, NSW 2001, Australia

Nov 27-Dec 02, 1994, CHICAGO, IL
Joint mtg AAPM/RSNA
Contact: AAPM Exec Office, 335 East 45th St, NEW YORK, NY 10017

3-7 June 1995, MONTREAL, QC
COMP/CCPM ann mtg

1994 SYLVIA FEDORUK PRIZE in MEDICAL PHYSICS

The Saskatchewan Cancer Foundation is pleased to sponsor a competition for the 1994 Sylvia Fedoruk Prize in Medical Physics. This award is offered annually to honour the distinguished career of Sylvia Fedoruk, Lieutenant-Governor of Saskatchewan and former physicist at the Saskatchewan Cancer Clinic.

The Prize will comprise a cash award of five hundred dollars ($500.00), an engraved plaque and travel expenses to enable the winner to attend the annual meeting of the Canadian Organisation of Medical Physicists (COMP) and the Canadian College of Physicists in Medicine (CCPM) which will be held September 13-18 1994 in Toronto, Ontario.

The 1994 Prize will be awarded for the best paper on a subject falling within the field of medical physics, relating to work carried out wholly or mainly within a Canadian institution and published during the 1993 calendar year. The selection will be made by a panel of judges appointed by COMP.

Papers published in *Physics in Medicine and Biology* and *Medical Physics* which conform to the conditions of paragraph #3 above will be automatically entered in the competition and no further action by the author(s) is required. All other papers must be submitted individually. Four (4) copies of each paper being entered must be sent to:

The Executive Director
Saskatchewan Cancer Foundation
2631 28th Avenue, Suite 400
Regina, Saskatchewan
S4S 6X3
ph. (306) 585-1831
fax (306) 584-2733

Each paper must be clearly marked: "Entry for 1994 Sylvia Fedoruk Prize" and must reach the Saskatchewan Cancer Foundation by Friday April 29 1994.

HAROLD JOHNS TRAVEL AWARD

The Board of the Canadian College of Physicists in Medicine is pleased to honour the Founding President of the College by means of the Harold John's Travel Award for Young Investigators. This award, which is in the amount of $1,000.00, is made to a College member under the age of 35 who has been a member for not more than two years. The award is intended to assist the individual to extend his or her knowledge by travelling to another centre or institution with the intent of gaining further experience in his or her chosen field, or, alternately, to embark on a new field of endeavor in medical physics.

Further information can be obtained from:

BOURSE de VOYAGE HAROLD JOHNS

Le Conseil du Collège Canadien des Physiciens en Médecine est heureux d'honorer son président fondateur en offrant aux jeunes chercheurs la bourse Harold Johns. Cette bourse, d'une valeur de $1000,00, est éligible aux membres du Collège agés de moins de 35 ans et qui sont membres depuis deux ans ou moins. La bourse a pour but d'aider le récipiendaire à parfaire ses connaissances dans son domaine ou à démarrer dans un nouveau champ d'activités reliées à la physique médicale, en lui permettant de voyager vers un autre centre specialisé.

Les demandes seront addressées à:

The Registrar / Le Registraire
CCPM
c/o NSCC
5820 University Ave
Halifax, NS
B3H 1V7

The deadline for the next award is May 15, 1994.

La date limite pour les demandes du prochain concours est le 15me Mai 1994.

Past recipients:

Récipiendaire anterieur:

1990	Dr. L. John Schreiner, Montreal
1991	Ms. Moira Lumley, Kingston
1992	Dr. Donald Robinson, Edmonton
1993	Dr. Yunping Zhu, Toronto

Members of the COMP/OCMP and/or the CCPM can make a donation to the fund by volunteering to increase their 1994 membership dues.

Les membres du COMP/OCPM et\ou du CCPM peuvent faire un don à la cotisation de 1994 un montant additionel de leur choix.

COMP ANNOUNCEMENT

According to the recent changes of the COMP bylaws, the election of officers will be done by mail ballot. Nominations are now solicited for the following positions on the COMP executive:

- ***chair-elect***
- ***newsletter editor***

Please submit nominations to:

AVIS DE L' OCMP

L'élection des membres de l'exécutif se fera par la poste, selon les nouveau règlements. Nous demandons des candidatures pour combler les postes suivants au comité exécutif de l'OCPM:

- ***président-élu***
- ***éditeur du bulletin***

Envoyez vos candidatures au:

Dr. John Aldrich
Vancouver General Hospital
Department of Radiology
855 West 12th Ave
Vancouver, BC., V5Z 1M9

New Job Search Service

Since its inception, the Canadian Medical Physics Newsletter has accepted advertisements from organizations seeking personnel. At the COMP annual general meeting last year it was suggested that some similar service be extended to individuals seeking employment.

This service is now being offered. A small advertisement can be placed in the Newsletter for a fee of $20 for COMP members and $25 for non-members (prepaid cheque or money order made out to COMP). The advertisement should include the person's name, address and phone number, and a 50 word (maximum) paragraph in point form giving information which may help employers decide if a reply is justified. For example, one might wish to specify degrees held, previous work experience, and a description of the type of work desired.

It is hoped that the service will be helpful for both individuals in Canada and those interested in moving here. Unsolicited job applications are often arriving in our mail, perhaps this service will provide a forum to which such applications can be forwarded.

NOTICE of PROPOSED CHANGE in COMP/OCPM BYLAWS

ARTICLE IV (c)
Duties of Officers

The proposed Bylaw would read: (Italic denote changes)

> The Chairperson shall be the chief executive officer of the COMP and shall preside at the annual general meeting and at the executive meeting. *(S)He shall chair the Scientific Program Committee for that year.*
>
> The chairperson-elect shall, in absence or disability of the chairperson, perform the duties and exercise the powers of the chairperson and shall perform such other duties as shall from time to time be imposed upon him (her) by the executive. *(S)He is a member of the Scientific Program Committee.*
>
> The past-chairperson is mainly responsible for matters involving other organizations. *(S)He is also a member of the Scientific Program Committee.*

Discussion:

The executive of 1993-94 have created a Scientific Program Committee to plan and organize the scientific component of our annual general meetings. Currently, this committee is chaired by the chair-elect, but will in future be chaired by the chair. There have been problems with the system in the past where a freshly elected chair-elect was expected to organize the scientific program on short notice or expertise. Our meetings are becoming larger, and are being planned several years in advance. It is crucial that the scientific program organizer should have at least two years of planning. The proposed committee allows the chair-elect to observe and learn during the first year on the executive, chair and run the committee on the second year, and act as a resource person during the term as past-chair. This system also allows us to pass on the expertise developed by succeeding chairs.

The duties of the committee are as follows:

- Review of Abstracts for the AGM
- Organization of sessions and the number of sessions
- Publication of abstracts in Medical Physics
- Responsible for the Call for Papers
- Publication of the generic program for future meetings

THE X-RAY CENTENNIAL FOUNDATION OF CANADA

Announcement from the President,

As President of this Foundation, I would like to invite you to submit proposals for activities or events which will be considered for funding by the Foundation.

The activities/events we have in mind are those which

(a) are relevant to the discovery, development and application of X-rays and/or radioactivity;

(b) will take place during 1995, possibly continuing into 1996;

(c) will contribute to the public understanding and appreciation of the role of X-rays and/or radioactivity in medicine, science and industry.

I must; stress the word "PUBLIC" in this statement, since the Foundation is unable to fund purely professional activities, such as lectures or conferences open only, or primarily, to members of your organisation. The activities we have in mind are those which will be directed towards, and open to, the general public or a section of the public such as students.

A statement setting out the CRITERIA FOR GRANTS in more detail follows. Applications for funding can be obtained from our office. To be considered, applications must be received at the address shown NOT LATER THAN June 1, 1994.

Montague Cohen, Ph.D., FCCPM
President

Contact:

THE X-RAY CENTENNIAL FOUNDATION
OF CANADA
48 Buena Vista Avenue Scarborough
ON M1S 1J2
Telephone : (416) 299-3778

Criteria for Grants

The following criteria will be used in assessing applications for financial assistance for events or projects organized to commemorate or celebrate the centennial of the discovery of X-rays by Wilhelm Roentgen in 1895.

The event or project must be designed to:

1. increase public awareness of the benefits and use of x-rays and other ionising radiations in medicine, science and industry;

2. educate members of the public on the historical aspects and present applications of x-rays and other ionising radiations in medicine, science and industry;

3. be of interest to members of the public;

4. be specific in nature;

5. commemorate the centennial of the discovery of x-rays or radioactivity.

Organizations planning or organizing the event or project must:

a. be a not for profit organization;

b. provide a detailed budget that indicates expected total revenues and expenses for the project or if not known at the time of application for the period for which the grant is requested;

c. provide such other information as may be required to indicate a reasonable assurance that the project can be completed;

d. receive financial support from sources other than the XCFC;

e. agree to provide the XCFC with an annual accounting for grants provided;

f. indicate how surplus funds(if any) will be distributed after the completion of the event or project;

MEDICAL PHYSICIST - RADIATION ONCOLOGY
London Regional Cancer Centre
London, Ontario

The Physics Department invites applications for a Medical Physicist position. The Centre is a member of the Ontario Cancer Treatment and Research Foundation, and is affiliated with Victoria Hospital and the University of Western Ontario.

With a caseload of approximately 2800 radiotherapy patients per year, the Centre is equipped with five linear accelerators, a Cobalt-60 unit, a kilovoltage unit, two radiation therapy simulators, and two LDR and one HDR remote afterloading units for brachytherapy. Treatment planning systems include a Theraplan system, a Nucletron Planning system and a in-house network of VAX and SUN workstations. Specialized clinical programs have been implemented including stereotactic radiosurgery, total body irradiation, and HDR brachytherapy. Research interests include portal imaging, new radioisotopes, and 3D dose computation for megavoltage beams of x-rays and electrons.

Reporting to the Head of Clinical Physics, the Medical Physicist will join a team consisting of seven other physicists, four dosimetrists, two computer specialists, and a number of physics students and residents. The major duties of the position will be in clinical radiotherapy physics, although the successful candidate will be encouraged to participate in some research and teaching. Appointments at the University of Western Ontario will be possible for individuals with a Ph.D. degree.

Candidates should possess an M.Sc. or a Ph.D. degree and have demonstrated practical experience in radiotherapy physics. Salary will be based on the candidate's previous training and experience, in accordance with the physics salary scales of the Ontario Cancer Treatment and Research Foundation. Applicants should submit their curriculum vitae, in confidence, and include the names of three work-related references before **April 30, 1994**.

The Ontario Cancer Foundation is an Equal Opportunity Employer but is directed by Canadian Immigration to state that "preference will be given to Canadian citizens and permanent residents of Canada".

SEND YOUR APPLICATION TO:

Mrs. Marguerite Chauvin, Human Resources Administrator
London Regional Cancer Centre
790 Commissioners Road East
London, Ontario, Canada N6A 4L6

The London Regional Cancer Centre

HEAD, CLINICAL PHYSICS
Department of Physics

The Physics Department invites applications for a Head of Clinical Physics. The London Regional Cancer Centre is a member of the Ontario Cancer Treatment and Research Foundation, and is affiliated with Victoria Hospital and with the University of Western Ontario.

With a caseload of approximately 2800 radiotherapy patients per year, the Centre is equipped with five linear accelerators, one Cobalt-60 unit, one kilovoltage unit, two radiation therapy simulators, and two LDR and one HDR remote afterloading units for brachytherapy. Treatment planning systems include a Theraplan system, a Nucletron Planning system and an in-house network of VAX and SUN workstations. Specialized clinical programs have been implemented including stereotactic radiosurgery, total body irradiation, and HDR brachytherapy. Research interests include portal imaging, new radioisotopes, and 3D dose computation for megavoltage beams of x-rays and electrons. We are busy planning for an expansion of our treatment services and facility, with the addition of three megavoltage units and advanced simulation technology by 1997.

Reporting to the Director of Physics, the Head will be responsible for providing leadership to a team consisting of five other physicists, five dosimetrists, one computer specialist, and a variety of physics students and residents. The major duties of the position include participating in, coordinating and organizing the radiotherapy physics services. Demonstrated experience with the planning and design of new radiation facilities will be considered a significant asset. The Head also serves as the Centre's Radiation Protection Officer. The successful candidate will be expected to participate in research and teaching, particularly in coordinating our medical physics residency program. Appointments at the University of Western Ontario will be possible for individuals who desire to teach at the graduate level or to access graduate students.

Candidates should possess a M.Sc. or a Ph.D. degree, have practical experience for at least 10 years in a radiotherapy centre, and have a strong publication record. Salary will be based on the candidate's previous training and experience, in accordance with the physics salary scales of the Ontario Cancer Treatment and Research Foundation. Applicants should submit their curriculum vitae, in confidence, and include the names of three work-related references before **MAY 30, 1994**.

The Ontario Cancer Foundation is an Equal Opportunity Employer but is directed by Canadian Immigration to state that "preference will be given to Canadian citizens and permanent residents of Canada".

Interested candidates may submit their applications, in confidence to: Mrs. Marguerite Chauvin, Human Resources Administrator, The London Regional Cancer Centre, 790 Commissioners Road East, London, Ontario N6A 4L6.

THE ONTARIO CANCER TREATMENT AND RESEARCH FOUNDATION

THUNDER BAY REGIONAL CANCER CENTRE
TRAINING POSITION IN MEDICAL PHYSICS

LOCATION: Thunder Bay, Ontario Canada

CONTACTS:
Human Resources
Thunder Bay Regional Cancer Centre
Ontario Cancer Treatment and Research Foundation (OCTRF)
290 Munro Street
Thunder Bay, Ontario Canada P7A 7T1

POSITION: Medical Physics Resident

Applications are invited for a training position in Medical Physics at the Thunder Bay Regional Cancer Centre of the OCTRF.

The Centre is a regional cancer care facility within the OCTRF system. It provides cancer care services to the population of Northwestern Ontario. The Physics Department consists of two Physicists, a Dosimetrist/Electronics Technologist, a Physics Assistant and a Machinist.

Current radiation therapy equipment consist of a dual energy linear accelerator (6 & 20 MV x-rays and 6-21 MeV electrons), a Cobalt unit (planned to be replaced by a dual energy linear accelerator with multileaf collimator and a portal imaging system within the next two years), a CT-simulator, an orthovoltage unit and a Nucletron LDR remote afterloading device. Treatment planning is carried out on a Theraplan-L system (scheduled for replacement with a 3D system within the next year). The addition of an HDR unit is also being planned. The Physics Department is well equipped with a full complement of physics and dosimetry equipment, as well as computational facilities.

Applicants should have a Ph.D. in Medical Physics, Physics or a closely related subject and an interest in Clinical Radiotherapy Physics. The successful candidate is expected to participate in and contribute to all aspects of operation of the Medical Physics Department including clinical research and development projects.

A competative compensation package is offered.

In accordance with Canadian Immigration requirements, priority will be given to Canadian Citizens and permanent residents of Canada. Applications are solicited from all qualified candidates.

Interested candidates should forward a curriculum vitae to the address stated above, together with the names and addresses of three current references. Deadline for receipt of applications is May 30, 1994.

MEDICAL PHYSICIST

TOM BAKER CANCER CENTRE
CALGARY, ALBERTA
CANADA

An expansion of the Department of Medical Physics has created an employment opportunity at the Tom Baker Cancer Centre for a Medical Physicist or Senior Medical Physicist interested in radiation oncology.

A Division of the Alberta Cancer Board, the Tom Baker Cancer Centre has overall responsibilities for the Southern Alberta Cancer Program. We are a comprehensive cancer centre, treating approximately 2,600 new patients a year, and have major research and education components in collaboration with the Faculty of Medicine, University of Calgary. Add the splendor and recreational diversity of the majestic Rocky Mountains and the vitality of a rapidly growing City of 750,000 that successfully entertained the world during the 1988 Winter Olympics, and the resulting opportunities are ideal for career and family life.

The Medical Physics Department has a staff of 20, which includes medical physicists, physics technicians, dosimetrists, electronics technologists, machinists, and cast and mould staff. Radiation therapy equipment available includes three linear accelerators, two cobalt units, two simulators, and both LDR and HDR remote afterloading brachytherapy. The treatment planning system is based on a hybrid VAX/Sun platform. The accelerators are the most up-to-date and are fitted with the latest advances such as dynamic features, portal imaging and multileaf collimators. Additional treatment capacity and physics space is planned for a new expansion.

On joining our team, you will participate in the service, research and educational activities of the Department and be eligible for academic appointment with the University of Calgary. Opportunities for research funding are very good.

We offer salaries that are very competitive in the Canadian market and supplement them with travel and professional allowances as well as a relocation package. Candidates should possess an M.Sc. or a Ph.D. Degree and have documented experience in Medical Physics. The level of the appointment will be dependent upon the qualifications and experience of the applicant.

In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada.

Be a part of our departmental growth and expand your career in a vibrant, young city. Send your Curriculum Vitae and the names of three references to:

Karen Breitman, FCCPM
Department of Medical Physics
Tom Baker Cancer Centre
1331 29 Street N.W.
Calgary, Alberta, Canada
T2N 4N2

Abstracts recieved for the 1994 COMP A M Over 70 abstracts were submitted for the upcoming September meeting. The sessions are currently being organised. Each talk will be 8 minutes long with 2 minutes for questions. A list of titles is presented below so that you can confirm receipt of your submission.

First Authour	Title of Presentation	City
Allen	A dose calculation program for high energy beams	Ottawa
Archambault	Dosimetry of large wedged high energy X-ray beams with the Theraplan Treatment Planning system	Montreal
Aubin	Role of Digital Portal Imaging Systems in the Radiotherapy of Breast Cancer	Quebec City
Audet	Multiple-site fast exchange model for spin-lattice relaxation in the fricke gelatin dosimeter	Montreal
Bentourkia	Design of energy and space variant Kernels for scatter subtraction-restoration in high resolution PET	Sherbrooke
Bishop	Dynamic Magnetic Resonance Imaging of the pituitary	Toronto
Bissett	Digital Images for Radiotherapy simulation and Verification	Sudbury
Bissonnette	Quantum Accounting Analysis for Video-based Portal Imaging	London
Burns	Harmonic Imaging and Doppler Using Microbubble Contrast Agent: A new Method for Contrast Imaging	Toronto
Brown	Determination of Radiosensitivity in vitro using a Clonogenic Assay and Asymmetric Field Inversion Gel electrophoresis	Ottawa
Byng	Automated Analysis of Mammographic Densities and Risk of Breast Cancer	Toronto
Cadorette	Development of a very high resolution PET scanner for quantitative, regional, functional imaging of small animals	Sherbrooke
Christopher	The Feasibility of Mapping Microcirculatory Blood Flow with High Frequency Doppler Ultrasound	Toronto
Chu	High Resolution Magnetic Resonance Imaging Gradient Coils Using Optimized Printed Circuit Board Designs	London
Clark	The relationship between rectal dose and the development of late rectal complications in patients treated for ca. of the cervix with HDR brachytherapy	Montreal
Clark	Complications from fractionated sterotactic radiotherapy for meningioma in the cavernous sinus region: a dosimetric analysis	Montreal
Cunningham	A Spatial-Frequency Dependent Quantum Sink Model of Noise in X-ray Imaging Systems	London
Ding	Electron Beam Spectra from Different Accelerators in Radiotherapy	Ottawa
Duzenli	Towards Quantitative MRI Dosimetry	Edmonton
El-Khatib	On the Choice of Beam Angulation and Combination of Beam Degraders for Total Skin Electron Irradiation	Vancouver
Fallone	Fourier Analysis of the Left Thoracic Paraspinal Line	Montreal
Foster	Current Developments in High Frequency Intravascular Ultrasound	Toronto
Gardey	Calculation of the Optimal Range Modulator Function for a clinical proton beam	Vancouver
Gati	Functional Magnetic Resonance Imaging of the Brain	London
Gosselin	The dosimetry of centrally shielded electron beams	Montreal
Guo	Quanititative imaging of in-vitro flow field using 3D colour doppler ultrasound	London
Haider	Measurements of Phantom Scatter Factors for Small Field Sizes in High energy X-rays	Vancouver
Harasiewicz	Ultrasound Backscatter Microscopy of Articular Cartilage	Toronto
Henderson	In vivo MRI Measurement of the Blood-Brain Transfer Constant of Gadolinium in Rabbit Brain Tumors	London
Henry	Solid State High Resolution Detectors for Digital Mammography	Toronto
Holdworth	Turbulence distal to stenoses: In vitro measurements in a carotid model	London
Howard	In-Vivo Measurement of Cerebral Blood Flow in Rabbits Using Contrast Enhanced CT	London
Huda	Imaging Performance Versus Film Optical Density	Florida
Huda	Assessment of Contrast Enhancement for Wavelet Based Mamography Image Processing Algorithms	Florida
Hunter	Digital Radiography: Optically Switched Readout of Metallized Pixel Elements on an Amorphous Selenium X-ray Receptor	Toronto

Jarosz	Role of Microstructure in Ultrasonic Hyperthermia by Interstitial Applicator	Ottawa
Jones	Characterization of T2 Spectra of White Matter, Gray Matter and Lesions in MS Patients	Toronto
Lamer	Registration of a Reconstructed Arterio-Venous Malformation (AVM) Volume and of a MR volume	Montreal
Lee	A Dynamic CT study of the Cerebrovascular Effects of Sterotactic Radiosurgery in the Treatment of Brain Tumours	London
Lockwood	The Design of Sparse Transducer Arrays for Ultrasound Imaging	Toronto
Ma	Characterization of Realistic electron Beams from Three Clinical Linear Accelerators	Ottawa
MacDonald	Radiation Induced Conductivity Effects on Electret-based Personnel Dosimetry	Montreal
MacKenzie	Arbitrary Dose Distribution Profiles by Dynamic Collimation	Edmonton
Mah	Use of Amorphous Selenium for Portal Imaging	Toronto
Maier	Novel design for a Transverse Gradient Coil with large region of gradient homogeneity	London
McGhee	The accuracy of dose distributions Measurements using TLD in an anthropomorphic phantom	Sudbury
McLellan	An Energy Evolution Method for Electron Beam Dose Calculations	London
Meeder	Quality Assurance of Laser Film Digitizers	Londonl
Mitchell	Computer Assisted Quantification of Multiple Sclerosis Lesion Volumes	London
Moreau	Accuracy of geometric measurements in 3D ultrasound images	London
O'Brien	Dynamic Radiosurgery with Multiple Isocentres	Toronto
Oelfke	The Feasibility of Proton Dose Monitoring with PET: Quantitative Studies	Vancouver
Parker	Imaging of HDR Brachytherapy dose Distributions using MRI and Fricke Gelatin Dosimetry	Montreal
Pogue	Iterative Reconstruction for Near-Infrared Imaging using a Multigrid Finite Difference Forward Calculation	Hamilton
Que	X-ray Imaging using Amorphous Selenium: Inherent Resolution	Toronto
Ramani	A Q/A Phantom for Sterotactic Radiosurgery:Quantitative Measurements	Toronto
Rickey	A Doppler Ultrasound Clutter and Sensitivity Phantom	London
Rieppo	X-ray Imaging with Amorphous Selenium: Liquid Crystal Light Valve for X-ray Imaging	Toronto
Robert	Description and Validation of a New Quantitative Angiography System	Toronto
Sabol	Rotary Scanning Equalization Radiography (RSER): A New Geometry for High Contrast Imaging of the Dense Breast	Toronto
Sharpe	Dose Calculations for high energy x-ray beams:The effects of extra-focal radiation	London
Sheik-Bagheri	Monte Carlo odel of the 6MV photon beam from a SL25 accelerator	Ottawa
Sloboda	Multileaf Collimation of Photon Beams:Physics Issues and Clinical Implications	Edmonton
Smith	Anthropomorphic Vascular Models of Stenosed human Carotid Arteris	London
Soutar	A Segmented K-Space Imaging Method for 3D Dynamic Breast MRI	Toronto
St. Lawrence	Measuring Cerebral Blood Flow using Magnetic Resonance Spectroscopy: Accounting for the Diffusion Limitation of the Tracer, Deuterium Oxide	London
Sun	Dosimetric Study of Asymmetric Photon Beams due to Multileaf Collimation	Toronto
Szanto	Improved Immobilization and Respositioning in Fractionated Sterotactic Radiotherapy	Ottawa
Tong	The Geometric Accuracy and Resolution of a 3-D Prostate Ultrasound Imaging System	London
Urchuk	Non-Invasive blood pressure measurement by Magnetic Resonance	Toront
Wallace	Modelling the Increase in Mobile Lipids observed in Necrotic Ovarian Cancer Biopsies by Proton Magnetic Resonance Spectroscopy using Multicellular Spheroids	London
Westmore	Demonstration of Computed Tomography Using Coherently Scattered X-Rays	London
Whelan	Determination of complete temperature distributions using parameter estimation: Application to Interstitital laser Heating	Hamilton
Wierzbicki	An analytical representation of small radiation fields for Cobalt-60 gamma rays	Montreal
Wilkins	Cisplatin and Low Dose Rate irradiation in Cisplatin Sensitive and Resistant Human Cancer Cells	Ottawa
Woo	Towards a Practical Unified Treatment Planning System	Toronto
Zhao	A Flat-Panel Imaging Detector for digital Radiology Using Active Matrix and Amorphous Selenium	Toronto

CANADIAN COLLEGE OF PHYSICISTS IN MEDICINE

LE COLLÈGE CANADIEN DES PHYSICIENS EN MÉDECINE

C/O Nova Scotia Cancer Centre
5820 University Avenue
Halifax, Nova Scotia, Canada, B3H 1V7

CCPM Exam Schedule

The application and exam schedule for 1994 is:

Membership Exam:

Apply by: March 18, 1994
Exam Date: June 18, 1994

Fellowship Exam:

Apply by: June 14, 1994*
Exam Date: September 14, 1994

* Note: Those writing the membership exam on June 18, 1994 should confirm their fellowship application and pay the fee within one week of receiving the exam results.

New CCPM Membership Exam Format

The membership exam will be given in two 2 1/2 hour sittings separated by a lunch break. The first sitting will have two parts: one hour of general medical physics short answer questions and 1 1/2 hours of questions specific to the applicant's sub-speciality. The afternoon sitting will require the candidate to answer two questions selected at random by the chief examiner from the applicant's sub-speciality question bank.

The exam book will be revised and divided into four sections to provide approximately 30 questions in each of the sub-specialities of radiation oncology, diagnostic imaging, nuclear medicine and magnetic resonance imaging. The new books will be available from the Registrar early in the Fall of 1993.

For those looking for a head start, many of the new sub-speciality questions will be similar to those in the present book for the same sub-speciality.

The application form for membership and fellowship has been revised for 1994 and is available from the Registrar.